

. UDC 549.4

USSR

BUBLIK, V. T., KARATAYEV, V. V., KULAGIN, R. S., MILOVINSKIY, M. G.,
OSVENSKIY, V. B., STOLYAROV, O. G., KHOLODEVIY, L. P., State Scientific-Research
and Design Institute of the Rare Metals Industry

"Nature of Point Defects in GaAs Single Crystals as a Function of Composition
of Melt Used in Growing Them"

Moscow, Kristallografiya, Vol 18, No 2, Mar-Apr 73, pp 353-356.

Abstract: The dependence is studied between the nature and concentration of point defects in GaAs monocrystals and the composition of the growth melt. During the studies, the density of specimens was determined with high precision, lattice periods and internal friction were measured. The results produced indicate that single-phase GaAs crystals can be grown from melts containing between 46.7 and 53.5 at. % As, crystals of stoichiometric composition being produced from a melt rich in As, with its concentration in the melt 50.5 at. %.

1/1

USSR

UDC 616.981.714

KULAGIN, S. M., and TARASEVICH, I. V.Moscow, Likhoradka Tsutsugamushi (Tsutsugamushi Fever), Meditsina, 1972,
232 pp

Translation: Contents

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USSR

KULGAIN, S. M., and TARASEVICH, I. V., Likhoradka Tsutsugamushi, Meditsina,
1972, 232 pp

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The data from world literature are generalized for the first time in this monograph, and the personal observations of the authors with respect to various problems of this infectious disease is discussed. The history of its study,

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USSR

KULAGIN, S. M., and TARASEVICH, I. V., Likhoradka Tsutsugamushi, Meditsina, 1972, 232 pp

data on the propagation of tsutsugamushi, the morphology, methods of cultivation, antigenic structure, immunogenic properties, natural variability and the resistance of the pathogen are discussed.

A study is made of the pathogenesis, clinical treatment, diagnostics and differential diagnostics, prognosis, treatment, immunity and prophylaxis and also the standard landscapes of the centers, lists of carrier mites and warm-blooded animals which carry the pathogen of the disease.

The monograph contains 59 illustrations including maps of the world propagation of the natural centers and carriers. The book is designed for doctors of infectious diseases, epidemiologists, immunologists and therapists.

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Acc. Nr: AP0036831

K
Ref. Code: UR 0016

PRIMARY SOURCE: Zhurnal Mikrobiologii, Epidemiologii, i Immunobiologii, 1970, Nr 1, pp 133 -137

A STUDY OF THE ANTIGENIC STRUCTURE OF RICKETTSIA BURNETI,
PHASES I AND II, BY THE METHOD OF ELECTRON
MICROSCOPIC IMMUNOCYTOCHEMISTRY

A. A. Avetyan, S. M. Kulagin, R. I. Kudetina, S. A. Gulyashkaya,
V. M. Klyshnarev

The authors carried out investigations for localization of the antigens in Rickettsia burneti, phases I and II, with the aid of ferritin-labeled gamma-globulins obtained from the «early» and «late» sera. There were revealed differences in the character of adsorption of immune gamma-globulins pointing to superficial and deep localization of antigenic substances of phases I and II. In rickettsia of phase II there was noted the presence of two antigenic determinants which reacted with both phasic components.

D.M.

11

6

REEL/FRAME
19721/48

USSR

KULAGIN, S.V.

K
UDC 621.375.592:621.373.74

"On A Permissible Variation In The Slope Of The Chmic Characteristic Of Photoconduct-
ive Cells"

Tr. Mosk. vyssh. tekhn. uch-shcha im N. E. Baumana (Works of Moscow Higher Technical
Training imenie N.E. Bauman), 1970, No 135, pp 115-122 (from RKh-Elektronika i yeye
primeneniye, No 8, August 1970, Abstract No 88207)

Translation: It is shown that in prevailing technical specifications for cadmium
sulfide photoconductor cells of Types SF2-2 and SF2-5, the permissible spread of the
slope of the lux characteristic γ is excessively high. Requirements for the per-
missible error of measurement of the luminance of an object can be satisfied better
with a reduction of $\Delta\gamma$ to the magnitude 0.03-0.04. With variations of the values
of γ of photoconductive cells from normal values which exceed 0.05, it is proposed
to achieve their selection or a correction of the luminous current in the exterior
circuit by a choice of the magnitude of the additional resistance. N.L.

USSR

UDC 621.9.047

KULAGIN, V. D., Irkutsk

"Effect of Electrolyte Composition and Current Density on the Workability of Steels"

Kishinev, Elektronnaya Obrabotka Materialov, No 5, Sep-Oct 71, pp 16-19

Abstract: The workability (treatment productivity and surface quality) of steels 30KhGSA, 30KhGSMA and Kh18N9T in solutions of NaCl, KCl, NaNO₃, NaClO₃, HCl with quinclines, and NaCl with additions of KBr, NaI and NaNO₂ at a current density of 5-50 a/cm² was investigated. It was established that the addition of KBr, NaF and NaNO₂ to the NaCl solution change the treatment productivity of steels 30KhGSA and 30KhGSMA very little, but substantially affected surface quality. All the steels tested can be easily treated in a 4% solution of NaClO₃. 1 table, 2 figures, 3 bibliographical references.

1/1

- 81 -

1/2 023

UNCLASSIFIED

PROCESSING DATE--09OCT70

TITLE--THERMODYNAMICS OF GASEOUS OXYGEN CONTAINING COMPOUNDS -U-

AUTHOR--(04)-BORISOV, M.I., KULAGIN, V.I., ANTONOV, M.A., MASLOV, P.G.

COUNTRY OF INFO--USSR

K

SOURCE--ZH. FIZ. KHM. 1970, 44(3), 826-7

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--THERMODYNAMICS, OXYGEN COMPOUNDS, THERMODYNAMIC PROPERTY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1993/0295

STEP NO--UR/0076/70/044/003/0826/CH27

CIRC ACCESSION NO--A00113225

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--09OCT70
CIRC ACCESSION NO--AP0113225
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FORMULAS ARE DERIVED FOR THE 1ST
TIME WHICH CAN BE USED FOR THE CALCN. OF THERMODYNAMIC PROPERTIES OF 10
GASEOUS CUMPS.: HUX (X EQUAL 0, T, A1, F), DOX (X EQUAL T, A1, F), TOX
(X EQUAL A1, F), AND ALOF AS FUNCTION OF TEMP. AND PRESSURE. THEY ARE
VALID AT 250-6000DEGREESK AND AT ANY PRESSURE AT WHICH A GIVEN GAS CAN
BE CONSIDERED AS BEING IDEAL. THE ACCURACY IS 0.1-0.8PERCENT, AND
0.1-1.5PERCENT FOR C SUBDEGREES. ALL VALUES ARE EXPRESSED IN
CAL-MOLE-DEGREE. VALUES OF COEFFS. PRESENT IN THESE FORMULAS ARE
TABULATED. FACILITY: LENINGRAD. GOS. PEDAGOG. INST. IM.
GERTSENA, LENINGRAD, USSR.

UNCLASSIFIED

USSR

UDC: 621.396.677.45

KULAGIN, V. S.

"Spiral-Rod Shunt Fed Antenna With Undirected Radiation"

Tr. Lenigr. in-ta technoy mekh. i optiki (Transactions of Leningrad Institute of Precision Mechanics and Optics) 1970, No. 69, pp 19-21 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No 3B75)

Translation: A description is given of the structure of a spiral-rod antenna consisting of a parallel arrangement of rods insulated from the earth, and grounded spirals spaced at distances small compared to a wavelength. A comparative estimate of the results of testing rod-, and spiral-rod antennas two meters long for wavelengths of 45 meters is made. Two illustrations, bibliography of four.

1/1

USSR

UDC: 621.386.67.C01.5

IVANOV, I. G. and VULAGIN, V. S.

"Distortion of Antenna Near Fields by a Probe of Finite Dimensions During Measurement of the Amplitude-Phase Distribution"

Tr. Lenin-r. in-ta tochnyye i zh. optiki (Transactions of the Leningrad Institute of Precision Mechanics and Optics) 1970, No. 69, pp 30-33 (from RKh-tekhnika, No. 3, March 71, abstract No. 36102)

Translation: The directional diagram of a half-wave vibrator in the near zone in the presence and absence of a perturbing body (a sphere of diameter 0.1λ) moving along the vibrator axis is computed. Two illustrations, sitliography of noise. V. S.

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USSR

KULAGIN, V. S.

UDC: 621.395.677

"Simplified Formulas for Computing Space Phase Diagrams of Asymmetrical Vibrators in Half-Planes"

Tr. zinenko, in-ta tekhnika mekhaniki i optiki (Transactions of the Leningrad Institute of Precision Mechanics and Optics) 1970, No. 69, pp 22-25 (from Rzh-adiotschnika, No. 3, March 71, Abstract No. 3331)

Translation: Formulas are presented for engineering computation of space phase diagrams of an asymmetrical vibrator less than quarter-wave with a sinusoidal current distribution; the vibrator is set on a rib of a conducting half-plane. It is noted that the presented formulas shorten the machine time for the computations by a factor of 10. One illustration, bibliography of three. V. S.
1/1

- 13 -

USSR

UDC: 51:801

KULAGINA, O. S.

"Some Problems of Transformation of Trees of Relationships in Machine Translation"

V sb. Probl. kibernetiki (Problems of Cybernetics--collection of works), vyp. 24, Moscow, "Nauka", 1971, pp 161-190 (from RZh-Kibernetika, No 4, Apr 72, Abstract No 4V616)

Translation: The paper contains definitions of certain concepts used in analyzing the transformations of trees of dependences (in particular the definitions of a χ -tree, a generalized χ -tree). The form of the rules of transformation is also determined, and the problem of representing the rules of transformation in terms of isolated elementary rules is considered. Algorithms are defined which operate on the basis of aggregates of rules of transformation. Problems of computer realization of such algorithms are considered. Bibliography of 14 titles. Author's abstract.

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6610

CSO: 1843-W

- END -

- 63 -

USSR

UDC 51:155.001.57:612.82

BULGAKOVA, T. I., KULAGINA, O. S., LYAPUNOV, A. A.

"Problem of Modeling the Evolutionary Process Considering Selection. II."

Probl. Kibernetiki [Problems of Cybernetics -- Collection of Works], No 23,
Moscow, Nauka Press, 1970, pp 247-260, (Translated from Referativnyy Zhurnal,
Kibernetika, No 6, 1971, Abstract No 6 V665 by the authors).

Translation: For Part I, see RZhMat, 1969, 8V482. The statistical mechanisms
of divergence of forms and formation of genetically isolated "relict" groups
within the limits of populations are studied in greater detail with various
selection mechanisms.

1/2 026

UNCLASSIFIED

PROCESSING DATE--23OCT70

TITLE--GENERAL PROPERTIES AND CONSTRUCTION OF THE ROOT LOCUS OF AN EQUATION
WITH A QUADRATIC FREE PARAMETER -U-
AUTHOR-(02)-BUKHOVSEV, B.B., KULAGINA, O.V.

COUNTRY OF INFO--USSR

SOURCE--MOSKOVSKIY UNIVERSITET. VESTNIK. SERIIA III-FIZIKA, ASTRONOMIYA,
VOL. 11, JAN-FEB. 1970, P. 74-82
DATE PUBLISHED-----70

SUBJECT AREAS--MATHEMATICAL SCIENCES

TOPIC TAGS--DIFFERENTIAL EQUATION, CONTROL SYSTEM STABILITY, AERODYNAMIC
ROLL, HODOGRAPH, PARAMETER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1983/1628

STEP NO--UR/0188/70/011/000/0074/0082

CIRC ACCESSION NO--AP0054474

UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0054474

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ANALYSIS OF THE GENERAL PROPERTIES OF DIFFERENTIAL EQUATIONS WHOSE COEFFICIENTS DEPEND QUADRATICALLY ON A FREE PARAMETER. EQUATIONS OF THIS TYPE, FOR EXAMPLE, DESCRIBE THE BEHAVIOR OF SOME AUTOMATIC CONTROL SYSTEMS, WHERE THE FEEDBACK FACTOR CAN BE TREATED AS THE FREE PARAMETER. THE PROBLEM OF STUDYING THE STABILITY OR QUALITY OF SUCH SYSTEMS LEADS TO THE ANALYSIS OF THE BEHAVIOR OF THE ROOTS OF THE CORRESPONDING CHARACTERISTIC EQUATION, FOR A CONTINUOUSLY VARYING FREE PARAMETER. IT IS SHOWN THAT THE GENERAL PROPERTIES OF ROOT LOCI CAN BE USED TO PLOT ROOT HODOGRAPHS. FORMULAS FOR DETERMINING THE ASYMPTOTIC CURVES OF THE ROOT LOCI OF EQUATIONS OF VARIOUS CLASSES ARE DERIVED, USING WHICH ROOT LOCI CAN BE CONSTRUCTED WITHOUT RECOURSE TO ANALYTICAL FORMULAS OF HIGHER ORDER. A METHOD OF CONSTRUCTING ROOT LOCI OF EQUATIONS WHOSE COEFFICIENTS DEPEND QUADRATICALLY ON A FREE PARAMETER IS PROPOSED, WHICH MAKES USE OF METHODS DEVELOPED FOR EQUATIONS WITH A LINEAR PARAMETER. THE METHOD IS APPLIED TO AN EQUATION DESCRIBING THE MOTION OF AN AIRCRAFT WITH ROLL CONTROL, WHERE THE FLIGHT VELOCITY IS TREATED AS THE FREE PARAMETER.

- FACILITY: MOSKOVSKII GOSUDARSTVENNYI UNIVERSITET, MOSCOW, USSR.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--02 OCT 70
TITLE--CORRELATION BETWEEN VASOMOTOR REACTIONS TO NERVE STIMULATION AND
NORADRENALIN -U-
AUTHOR-(02)-UDELNOV, M.G., KULAGINA, V.P.

COUNTRY OF INFO--USSR *K*

SOURCE--BYULETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 69,
NR. 4, PP 11-15
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--NORADRENALIN, CAT, NERVE, DRUG EFFECT, BLOOD VESSEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/1537 STEP NO--UR/02197/07359/003/0011/0015

CIRC ACCESSION NO--APO105333

UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--02 OCT 70

CIRC ACCESSION NO--APO106333

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION WAS MADE OF THE CAUSES FOR DIFFERENCES IN THE RESPONSE OF THE LIMB VESSELS OF THE CAT TO THE CONTROLLED DOSES OF NERVE INFLUENCE. THE AUTHORS DEMONSTRATED A PARALLELISM IN THE CHARACTER OF REACTION OF VESSELS TO NERVE STIMULATION AND INTRA ARTERIAL ADMINISTRATION OF NORADRENALIN: IN THE ANIMALS, IN WHICH STIMULATION OF THE SYMPATHIC CHAIN INDUCED AMBIGUOUS, DILATATIONAL AND CONSTRICCTOR, REACTIONS, NORADRENALIN ALSO CAUSED DILATATION AT A LOW DOSE AND CONSTRICTION, AT A HIGH DOSE; IN THE ANIMALS, IN WHICH NEUROGENIC RESPONSES WERE CONSTRICTION ONLY, NORADRENALIN, IRRESPECTIVE OF THE GIVEN DOSE, CAUSED CONSTRICTION. PROLONGED INFUSION OF NORADRENALIN RESULTED IN THE SUBSTITUTION OF AMBIGUOUS NEUROGENIC REACTIONS BY CONSTRICCTOR REACTIONS. IT IS SUPPOSED THAT THE DIFFERENCES IN THE VASOMOTOR RESPONSE TO THE NERVE INFLUENCE ARE DUE TO THE ACTION OF ENDOGENIC NORADRENALIN ON THE REACTIVE PROPERTIES OF THE VESSEL STRUCTURE IN THE SMOOTH MUSCLES.

UNCLASSIFIED

172 014 UNCLASSIFIED PROCESSING DATE--13 NOV 70
TITLE--CHANGES IN VASCULAR REACTIVITY UNDER THE INFLUENCE OF ALDUMET AND
BENZANIDIN (ESBATAL) -U-
AUTHOR--KULAGINA, V.P.

COUNTRY OF INFO--USSR 

SOURCE--FARMOKOL. TOKSIKOL. (MOSCOW) 1970, 33 (2), 188-90

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CAT, VASODILATOR, DRUG EFFECT

CCNTRCL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/1167

STEP NO--UR/0390/T0/033/002/0188/0190

CIRC ACCESSION NO--AP0115186

UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0115186

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. ALDOMET OR BENZANIDIN ADMINISTERED I.V. TO ANESTHETIZED CATS AT 60-80 MG-KG CHANGED THE CHARACTER OF VASOMOTOR REACTIONS IN THE REAR EXTREMITIES TO ELEC. STIMULATION OF THE LUMBAR PORTION OF THE SYMPATHETIC CHAIN, WITH CHANGES INVOLVING WEAKENING OR SUBSTITUTION OF VASODILATOR FOR VASOCONSTRICCTOR EFFECTS. BENZANIDIN MODIFIED THE REACTION TO BOTH WEAK AND STRONG STIMULATION, WHILE ALDOMET DILATED THE CONSTRICCTOR VESSELS ONLY IN RESPONSE TO WEAK STIMULI. FACILITY: INST. KARDIOL, IM. MYASNIKOVA, USSR.

UNCLASSIFIED

Forming

USSR

UDC 621.771.8

ZHADAN, V. T., KULAK, Yu. Ye., and KULAK, G. K.

"Effect of the Rate of Reductions and Temperature-Speed Conditions on Roll Wear in Rolling H-Beams"

Plasticheskaya Deformatsiya Metallov i Splavov, Moscow, No 64, "Metallurgiya," 1970, pp 125-129

Translation: A dependency is established between the intensity of wear on roller rolls made of chrome-nickel cast iron with lamellar graphite, and the length of the area of deformation, lateral reduction of the flanges, speed of deformation, and temperature of the metal when rolling H-beams. The dependencies obtained make it possible to calculate the intensity of wear, taking into account the actual operating conditions of roller rolls in producing H-beams. Six figures and five bibliographic entries.

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USSR

UDC 621.178.15

ZHADAN, V. T., KULAK, Yu. Ye., and KULAK, G. K.

"Investigation of the Effect of Chemical Composition on the Hardness of Rolls
Made of Modular Cast Iron"

Moscow, Plasticheskaya Deformatsiya Metallov i Splavov, "Metallurgiya" Publishing House, No 64, 1970, pp 72-79

Translation: The correlation analysis method is used to study the effect of chemical elements and the casting diameter of rolls made of modular cast iron on the hardness of the rolls. A considerable positive effect on roll hardness is established for chromium and magnesium, while a negative effect is established for silicon and the casting diameters of the rolls. In order to receive high hardness indicators, it is essential to maintain the chromium content at the upper limit, and silicon at the lower limit. As a result of the study, an equation is obtained and a nomogram constructed for determining the hardness of rolls as a function of the content of chromium, magnesium, and silicon, and dependent on the roll diameter; in this way, it is possible to eliminate the labor-consuming operation of selecting templets for measuring hardness and the measurement operation. Two illustrations, three tables, and four bibliographic entries.

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USSR

UDC 576.851.555.097.29

KULAK, V. G., GOLSHMID, V. K., NENASHEV, V. P., GLUSHKOVA, A. I. and YANISHEVSKAYA, M. N., Moscow Institute of Vaccines and Sera imeni Nechmil'ev

"Study of the Fractional Composition of *Clostridium oedematiens* Toxins and Toxoids. Report I. Fractionation of Toxins and Toxoids by Gel Filtration"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, Vol 47, No 6, Jun 70, pp 112-115

Abstract: *Clostridium oedematiens* toxin has a mosaic structure. It contains lethal necrotic factors and hemolysin. The fractional composition of a toxin nutrient medium on Sefadex G-100 gel, including crude and purified *Clostridium oedematiens* toxoids, type A, was studied. The toxins were separated into three fractions, differing from one another in their biological and enzymatic activity. The first fraction contained the lethal dermonecrotic and antitoxin-binding activity; the second fraction contained the lecithinase and hemolytic activity; and the third fraction contained amylase. Two peaks were observed in the fraction of crude toxoid and toxin. All of the antitoxin-binding activity of the toxoids was contained in the high-molecular-weight proteins eluted in the first peak. The significance of the different components in *Clostridium oedematiens* immunity requires further study.

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USSR

UDC 576.851.555.097.29.086.3

SMIRNOVA, T. A., KUSHNAREV, V. M., KULAK, V. G., and KALYAEV, A. V., Moscow
Institute of Vaccines and Sera

"Electron-microscopic Study of Cl. oedematiens During Toxin Production"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 5, 1973,
pp 91-94

Abstract: Electron-microscopic examination of ultrathin sections of cells from 2- and 4-day-old Cl. oedematiens (type A, strain 79) cultures revealed that the normal cell is surrounded by a 5-layer wall consisting of 3 osmophilic layers separated by osmophobic layers. Many cells had defects in the walls through which exuded an osmophilic substance made up of barely distinguishable fibrous and membranous structures. Mature spores were rarely seen; pseudospores were much more common. The cytoplasm contained rod-shaped striated inclusions often possessing a crystalline structure. (These inclusions may have been the result of infection by bacteriophage). Toxin production declined following lysis of the bacterial mass.

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1/2 023 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--A STUDY OF THE FRACTIONAL COMPOSITION OF CL DEOEMATIENS TOXINS AND
TOXOIDS -U-
AUTHOR--(05)-KULAK, V.G., GOLSHMID, V.K., NENASHEV, V.P., GLUSHKOVA, A.I.,
YANISHEVSKAYA, M.N.
COUNTRY OF INFO--USSR

SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGIE, 1970, NR 6,
PP 112-115
DATE PUBLISHED-----70

K
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CLOSTRIDIUM, BACTERIAL TOXIN, TOXOID, FRACTIONATION, GEL,
FILTRATION, ENZYME ACTIVITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0394

STEP NO--UR/0016/T0/000/006/0112/0115

CIRC ACCESSION NO--AP0126149

UNCLASSIFIED

2/2 023

CIRC ACCESSION NO--AP0126149

UNCLASSIFIED

PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BY FILTRATION ON GEL SEPAREX 3-100 CL. ODEMATIENS TOXINS TYPE A WERE DIVIDED INTO THREE FRACTIONS DIFFERENTIATED BY TOXICITY AND FERMENTING ACTIVITY. THE FIRST FRACTION INCLUDED THE LETAHL DERMONECROTIC AND ANTITOXIN BENDING ACTIVITY, THE SECOND LECITHINASE AND HEMOLYTIC ACTIVITY, AND THE THIRD AMYLASE. GEL FILTRATION OF ODEMATIENS TOXOIDS PROVED TO INCREASE THEIR SPECIFIC ACTIVITY. FACILITY: MOSKOVSKIY INSTITUT VAKTSIN I SYVOROTOK IM MECHNIKOVA.

UNCLASSIFIED

USSR

UDC 621.771.8

ZHADAN, V. T., and KULAK, Yu. Ye.

"The Hardness of Rolls in Rail and Structural Mills"

Moscow, Plasticheskaya Deformatsiya Metallov i Splavov, "Metallurgiya"
Publishing House, No 64, 1970, pp 116-121

Translation: It is established, on the basis of an analysis of used sets of rolls on rail and structural mills and at structural mills, that in order to increase the service life of rolls, their minimum hardness should be raised by 50-80 HB, and the maximum by 20-40 HB, beyond the average hardness values of rolls delivered to metallurgical plants. Equations were derived for determining the hardness of a roll at any depth from the surface layer, if the hardness at a depth of 75 or 100 millimeters is known. A principle for selecting roll insets by their hardness is recommended. Three illustrations and one table.

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Forming

USSR

UDC 621.771.8

ZHADAN, V. T., KULAK, Yu. Ye., and KULAK, G. K.

"Effect of the Rate of Reductions and Temperature-Speed Conditions on Roll Wear in Rolling H-Beams"

Plasticheskaya Deformatsiya Metallov i Splavov, Moscow, No 64, "Metaliurgiya," 1970, pp 125-129

Translation: A dependency is established between the intensity of wear on roller rolls made of chrome-nickel cast iron with lamellar graphite, and the length of the area of deformation, lateral reduction of the flanges, speed of deformation, and temperature of the metal when rolling H-beams. The dependencies obtained make it possible to calculate the intensity of wear, taking into account the actual operating conditions of roller rolls in producing H-beams. Six figures and five bibliographic entries.

1/1

USSR

UDC 621.178.15

ZHADAN, V. T., KULAK, Yu. Ye., and KULAK, G. K.

"Investigation of the Effect of Chemical Composition on the Hardness of Rolls
Made of Modular Cast Iron"

Moscow, Plasticheskaya Deformatsiya Metallov i Splavov, "Metallurgiya" Publishing House, No 64, 1970, pp 72-79

Translation: The correlation analysis method is used to study the effect of chemical elements and the casting diameter of rolls made of modular cast iron on the hardness of the rolls. A considerable positive effect on roll hardness is established for chromium and magnesium, while a negative effect is established for silicon and the casting diameters of the rolls. In order to receive high hardness indicators, it is essential to maintain the chromium content at the upper limit, and silicon at the lower limit. As a result of the study, an equation is obtained and a nomogram constructed for determining the hardness of rolls as a function of the content of chromium, magnesium, and silicon, and dependent on the roll diameter; in this way, it is possible to eliminate the labor-consuming operation of selecting templets for measuring hardness and the measurement operation. Two illustrations, three tables, and four bibliographic entries.

1/1

USSR

K

CONFIDENTIAL

ZHADAK, V. T., ~~et al.~~, N. Yu., and VORONINA, V. A., ~~UDC 620.178.2.01.01.01.01~~, Strength Properties of Steel Alloys; ~~Scientific Research Institute of Metals~~

"Strength Properties of Steel Alloys"

Moscow, Metallurgy, No. 4, Aug 70, pp 40-41

Abstract: In examining materials for aircraft and marine structures, the main indicators are strength properties. Thus, a study was made of the mechanical properties, transverse strength, torsional strength, and resistance to heat of various steels. Test data are given, which, at 400, 600, and 1300°C, enable one to determine the properties when connecting heat-treated steel and aluminum. The results are not subjected to such treatments. A principal problem is the torsional strength of the torsionally stressed parts. The tensile strength of transversely stressed parts is compared with the strength of the longitudinal ones. In the authors' view, the strength of the latter is somewhat higher than that of the longitudinal, while the opposite is true at 500°C, though the former remains an important indicator. The properties of the roll material are also given. It is shown that they are not so good as those of the general structural steels. The authors believe that 900°F strength of the roll material is high enough for most purposes. The strength of the longitudinal parts is higher than that of the transversely stressed ones.

1/2

cc: SDR

MANSON, W. D., et al. - CIVILIAN DEFENSE INFORMATION

may be used in accordance with the provisions of the
SAC's directive.

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USSR

UDC 632.95

KULAKENKO, S. S. and BUROVA, M. S.

"Reaction of Aliphatic and Aryloxyalkyl Carboxylic Acid Chlorides with Epichlorohydrin"

V sb. Khim. sredstva zashchity rast. (Chemical Protection of Plants -- collection of works), No 2, Moscow, 1972, pp 226-231 (from RZh - Khimiya, No 22, 25 Nov 73, Abstract No 22N579 by V. A. Kozlov)

Translation: Compounds with the general formula $\text{RCOOCH}(\text{CH}_2\text{Cl})_2$ (I) and $\text{R}'\text{COOCH}_2\text{CH}(\text{OH})\text{CH}_2\text{Cl}$ (II) ($\text{R} = \text{C}_1 - \text{C}_3$ -alkyl, Ph, PhOCH_2 , alkyl- or phenoxyethyl halide, $\text{R}' = \text{PhOCH}_2$, alkyl- or phenoxyalkyl halide) are obtained by heating $\text{ClCH}_2\text{CHCH}_2\text{O}$ (III) with RCCl (IV) or $\text{R}'\text{COOM}$ (V), respectively. Examples.

(1) 0.13 mole of IV ($\text{R} = \text{Et}$) and 0.5 ml of AcOH are added to 0.13 mole of III at 70-71° and the mixture is kept for 10 hours at 90-100° and distilled in a vacuum to obtain I ($\text{R} = \text{Et}$), yield 45.7%, boiling point 93-45/2, d_4^{20} 1.2158, $n^{20}\text{D}$ 1.4520. I ($\text{R} = 4-\text{ClC}_6\text{H}_4\text{OCH}_2$) (Ia) is obtained in a similar manner after heating to 100-110° for 20 hours. Purification is carried out by chromatography through a column with Al_2O_3 , yield of Ia 46%, boiling point 152-3°. I is obtained in a similar

USSR

KULAKENKO, S. S. and EUROVA, M. S., V sb. Khim. sredstva zashchity rast.
(Chemical Protection of Plants -- collection of works), No 2, pp 226-231

manner (R, yield in %, boiling point in °C/mm or boiling point in °C, d_4^{20} , $n^{20}D$ are given: Me, 68.9, 150-2/19, 1.2461, 14480; Pr, 75.2, 96-8/15, 1.1763, 1.4508; Ph, 30.8, 160-6/15, 1.2766, 1.5332; PhOCH₂, 42.9, 173-210/1, 1.3032, 1.5242; 2,4-Cl₂C₆H₃OCH₂, 21.7, --, 1.4434, 1.5443; 2,4,5-Cl₃C₆H₂OCH₂, 55.6, 160-1; 2-Me-4-Cl-C₆H₃OCH₂, 53.8, 111-2; 2-MeC₆H₄OCH₂, 59.4, --, 1.2655, 1.5221; 2,4,5-Cl₃C₆H₂OCHMe, 65.1, --, 1.4138, 1.5446. (2) A mixture of 0.35 mole of II, 0.07 mole of V ($R' = 2,4,5\text{-Cl}_3\text{C}_6\text{H}_2\text{OCIMe}$), 0.05 g of NaOH, and 2.5 ml of water is heated to 70° for 15 hours, dissolved in 250 ml of ether, washed with water, 5% Na₂CO₃ solution, and water, dried over Na₂SO₄; the solvent is distilled off to obtain II ($R' = 2,4,5\text{-Cl}_3\text{C}_6\text{H}_2\text{OCHMe}$), yield 85%, $n^{20}D$, 1.5513. II is obtained in a similar manner (R, yield in %, $n^{20}D$ are given): PhOCH₂, 83, boiling point 65-60°; 2,4-Cl₂C₆H₃OCH₂, 85, 1.5475; 2-Me-4-ClC₆-H₃OCH₂, 85, 1.5333; 2,4,5-Cl₃C₆H₂OCH₂, 80, 1.5672; 2-Me-4-ClC₆H₃H₂O(CH₂)₃, 84, 1.5239; 4-FC₆H₄O(CH₂)₃, 60, 1.5127. I and II possess herbicidal and defoliating activity.

2/2

- 4.7 -

USSR

WDC 535.825:533.07

GLAZANOVA, I. D., ZARUBINA, I. L., KULAKOV, A. A., and SMIRNOV, V. A.

"Microspectrofluorometer"

Leningrad, Optiko-mekhanicheskaya promyshlennost' № 11, Nov 71, pp 30-34

Abstract: A microspectrofluorometer MLI-1 (Author Certificate No 1145322) intended for full microphotometric investigations and developed at the Leningrad Optico-Mechanical Department is described. It permits the observation and photography of microstructures, the evaluation of radiation intensity variation of separate selected structure elements, and the recording of their luminescence spectra, as well as their excitation and absorption spectra. A so-called "probe" lighting is used in the apparatus at which, with the aid of microobjectives, the images of diaphragm probes are projected in the plane of studied and reference specimens on the selected microstructure element. A functional diagram as well as the optical diagram of the MLI-1 apparatus are presented and described in detail. The apparatus spectral operational range with luminescence excitation is between 240-450 nm, in luminescence study 300-700 nm and in absorption measurements 250-700 nm. The introduction of a scanning microscope stage with displacement limits

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USSR

GLAZANOVA, I. D., et al., Optiko-mekhanicheskaya promyshlennost' No 11,
Nov 71, pp 30-34

from 10 to 300 microns, makes it possible to register the variation of
luminescence intensity or optical density of specimens along any selected
direction in the object plane, in scanning with probes 1 to 20 microns in
diameter.

2/2

- 132 -

1/2 022

UNCLASSIFIED

PROCESSING DATE--30 OCT 70

TITLE--CYTOGENETIC ANALYSIS OF THE BONE MARROW CELLS IN RATS EXPOSED TO
THE ACTION OF HERBICIDES OF THE TRIAZINE GROUP -U-

AUTHOR--KULAKOV, A.E.

COUNTRY OF INFO--USSR

SOURCE--FARMAKOL. TOKSIKOL. (MOSCOW) 1970, 33(2), 224-7

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

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(U)CHLORAZINE HERBICIDE, (U)IPAZINE HERBICIDE, (U)TRIETHAZINE HERBICIDE,
(U)ATRAZINE HERBICIDE, (U)PROPАЗINE HERBICIDE, (U)PROMETRYNE HERBICIDE,
(U)ETHYLMINDINE HERBICIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/0279

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CIRC ACCESSION NO--AP0122481

UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--APO122481

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AT 0.033-0.1 TIMES THE LD SUB50 VALUES, SIMAZINE, CHLORAZINE, IPAZINE, TRIETHAZINE, ATRALINE, PROPAZINE, PROMETRYNE AND ETHYLMIDINE GIVEN I.P. TO RATS DEPRESSED MITOTIC ACTIVITY OF BONE MARROW CELLS, INHIBITED MITOSIS IN PROPHASE, AND PRODUCED FUSION OF CHROMOSOMES. A SLIGHT INCREASE IN THE NO. OF CELLS WITH CHROMOSOMAL FRAGMENTS ABOVE CONTROL VALUES INDICATES A WEAK CYTOGENETIC EFFECT. ONE FIFTIETH LD SUB50 DOSES DID NOT SIGNIFICANTLY AFFECT THE MITOTIC INDEX. FACILITY: SARATOV. NAUCH. ISSLED.

INST. SEL'SKOI GIG., SARATOV, USSR.

UNCLASSIFIED

USSR

DOBROSERDOV, Yu. N., KULAKOV, A. F.

"A Priori Estimate of Information Connections of Sections and Algorithmic Control System"

Avtomatiz. Upr. Prom. Predpriyatiyami [Automation of Control of Industrial Enterprises -- Collection of Works], Kiev, Tekhnika Press, 1972, pp 22-28
(Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V670, by the authors).

Translation: Two methods of a priori estimation of information connections and weight factors of the sections of an algorithmic control system are studied. The first method is based on analysis of the information connections of the control system, represented as an aggregate system. The other method is based on the method of rank correlation.

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USSR

UDC 669.71.472

DEGKACH, A. S., DMITRIYEV, A. A., KOROBOV, M. A., KOMERIS, YE. G., KULAKOV, A. I.,
TSYPLAKOV, A. N.

"Improving the Design of Aluminum Electrolyzers"

Tr. Vses. n.-i. i proektu, na-ta alumin., naen. i elektrodn. prom-sti
(Works of the All-Union Scientific Research and Planning and Design Institute
of Aluminum, Magnesium and Electrode Industry), 1970, No 71, pp 29-36 (from
RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G165)

Translation: A description of improvements of electrolyzers of various types is presented. In the last 10-15 years, electrolyzers with a side current lead-in have been installed significantly. Work has been started on creating powerful electrolyzers with a current of 130 kilamps. Since the first series of electrolyzers with a side lead-in were put into operation, significant changes have been introduced into their structural design. These changes have promoted improvement of the technical and economic indexes. Operations have begun with the aim of finding the optimal parameters of powerful electrolyzers with a side lead-in. Electrolyzers of the given type for a current strength of 130 kilamps are being tested successfully. For further improvement

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JSSR

DERKACH, A. S., et al., Tr. Vses. n.-i. proyektn. in-ta alumin., magn. i elek-
trodn. prom-sti, 1970, No 71, pp 29-36

of the design of electrolyzers of all three types, new ideas are needed based on theoretical research and the search for new, more efficient structural designs of the basic assemblies and baths, and creation of effective means of mechanization.

2/2

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USSR

UDC 669.71.472

MIKHAYLOV, P. M., KULAKOV, A. I., KASHKO, Yu. G., FORSBLOM, G. V.

"Basic Conditions of Modeling of Gas Hydrodynamics in Aluminum Electrolyzers"

Tr. Vses. N-i. i Proyektn. In-ta. Alyumin., Magn. i Elektrodn. Proiz-sti [Works of All-Union Scientific Research and Planning Institute of the Aluminum, Magnesium and Electrode Industry], 1970, No. 71, pp. 94-110. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5., 1971, Abstract No. 5 G157 by the authors).

Translation: Based on the theory of similarity, gas hydrodynamics similarity criteria in aluminum electrolyzers are developed considering the mechanism of gas formation on the anode. The provision of similarity conditions on models of decreased size is practically impossible. However, the problem is simplified when limiting modes of typical bubble or film flow of anode gases are studied. Furthermore, investigations can be performed using models of individual aspects of gas hydrodynamics, for example, studies of the flow of anode gases and melt in the central areas of the electrolyzer, the circulation of melt between anode and bath side, etc. 6 biblio refs.

1/1

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Miscellaneous

USSR

UDC 669.71.471

DERKACH, A. S., KALUZHISKII, N. A., KULAKOV, A. I., SHTERN, V. I.

"Calculating an Aluminum Electrolyzer on a Digital Computer by the Energy Balance Method"

Tr. Vses. n.-i. i proyektn. in-ta alvumin., magn. i elektrodn. prom-sti
(Works of the All-Union Scientific Research and Planning and Design Institute
of Aluminum, Magnesium and Electrode Industry), 1970, No 71, pp 45-62 (from
RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G163)

Translation: Results and the procedure of computer calculation of an electrolyzer with side current lead-in are discussed. It, the energy yield, and a number of other parameters are calculated as functions of the selected current strength, anode width, and spacing between the ends of the pins in the anode. The effect of possible errors with errors in assigning the pole spacing, the electrochemical component of the voltage drop, the specific electrical conductivity of the electrolyzer, the magnitude of the current efficiency, and the heat losses of the electrolyzer on the final calculation result was analyzed. The procedure for calculating the electrolyzer can be used in design developments when selecting the optimal design of the electrolyzer. The directions in which it is necessary to continue work to refine the
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USSR

DERKACH, A. S., et al., Tr. Vses. n.-i. i proyektn. in-ta alumin., magaz. i elektron. prom-sti, 1970, No 71, pp 45-62

mathematical model of the electrolyzer and the calculation procedure are indicated. There are 8 illustrations and 1 table.

2/2

USSR

UBC: 8.74

TIMOFEEV, B. B., KOZLIK, G. A., KULAKOV, A. F., MARTYANOV, A. I.

"Algorithmization in Automatic Control Systems"

Algoritmizatsiya v Avtomaticheskikh Sistemakh Upravleniya [English version above], Kiev, Tekhnika Press, 1972, 240 pp (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V499K)

Translation: Problems of the development, computer programming, testing and operation of complex system control algorithms, algorithmic control systems (ACS) are systematized using a single methodological basis. Significant attention is given to analysis of the problems of statement and solution of these problems during the process of creation and introduction of automatic control systems (ACS). A method is suggested for study and improvement of the qualitative characteristics of complex algorithmic systems. The book is based on the experience gained in development of specific ACS, in particular economic ACS. Its content is illustrated with examples. It is designed for engineering, technical and scientific workers involved in the development, introduction and operation of automated and automatic control systems. It may be useful to

1/2

USSR



Timofeyev, B. B., Kozlik, G. A., Kulakov, A. F., Mart'yanov, A. I., Algoritmizatsiya v Avtomatizirovannykh Sistemakh Upravleniya, Kiev, Tekhnika Press, 1972, 240 pp

graduate students and university students, as well as persons interested in problems of algorithmization and application of cybernetics to the national economy.

2/2

AA0043564 .. KULAKOV A.N.

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent, 1/2

242501 IMPULSE FORMING DEVICE useful in automation
contains a generator, a former, register
and boosters.

The impulses from generator 1 enter the two
tact former 2 of impulses, two outputs from the
former are connected to the input of the two tact
decimal ferro-transistor meter 3, each decade of
which is in the form of a ringed register. The
required time lag, multiple to 10,100,1000 etc.
of the generator impulses, are taken off the
commutators of the ferrotransistor cells of the
register and transferred to register 4.

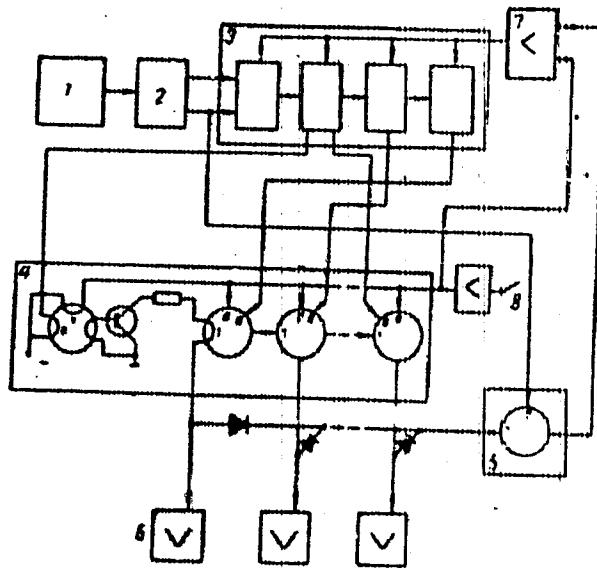
28.12.67 as 1206833/18-24. I.V. BELOUSOV & A.N.
— KULAKOV (11.9.69) Bul 15/25.4.69. Class 42m³, 21a¹.
Int.Cl.G 06f, H 03k.

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KULAKOV A.N. ~~SECRET~~

AA0043435

UR 0482

5

3-74

Soviet Inventions Illustrated, Section I Chemical, Derwent,

203921 A DEVICE FOR COOLING LIQUID SHIP-HEATING ANODE in electrolyzers for the production of aluminium, by means of metallic ribs with their bottom ends immersed in the liquid anode, is characterised in that in order to control temp. along the surface of the anode and to change over the device without stopping the electrolysis, the cooling ribs are made in the form of sections freely fixed to the anode. These sections are made of steel beams and plates made of copper, aluminium or other highly conducting metals. The proposed device consists of steel beams 1 and plates 2. The latter are fixed to the beams 1 and are immersed half-way down their length in the liquid anode. The temp. of the liquid anode can be controlled over its whole area by decreasing or increasing the number of sections and also the number of plates in the sections. This cooling unit can be replaced by a new one without stopping the electrolysis process. 6.2.67. as 1113087/22-1. M.A.KOROBOV et al. Irkutsk Aluminium Works (4.7.69.) Bul.10/10.3.69. Class 40c. Int.C1.C2d.

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1/8

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"APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R002201620016-1

AA0043435



40

2/3

19761763

APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R002201620016-1"

AA0043435

AUTHORS: Korobov, M. A.; Shul'ts, B. V.; Yanko, E. A.; Ivanushin, T. A.; Sobol', I. I.
Kostevich, D. N.; Ratmanov, V. N.; Kulakov, A. N.; Kits - Konyazina, L. A.

Irkutskiy Alyuminiyevyy Zavod

19761764
3/3

USSR

UDC 621.385.623.5.01

KULAKOV, A.V., KUDAKTIN, V.V.

"Quasi-Static Characteristics Of Two-Speed Electron Stream In Retarding Electrical Field"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific-Technical Collection. Microwave Electronics), 1970, Issue No 10, pp 52-61 (from RZh--Elektronika i yeye primeneniye, No 2, February 1971, Abstract No 2A144)

Translation: A theoretical method is developed for investigation of the quasi-static characteristics of a two-speed electron stream in a retarding electrical field. An analysis is presented of the effect of change of the density of the secondary emission current and the velocity of the electrons at the time of transit of the electrons of the primary current in the reflecting space. A discussion of the results obtained and a comparison of them with those known earlier is conducted. 4 ref. Summary.

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(4)

USSR

FOMENKOV, V. N., STREKALOVA, E. Ye., KATOSOVA, L. D., CHIRKOVA, Ye. M.,
SAL'NIKOVA, L. S., SILANT'YEVA, I. V., YEFIMENKO, L. P., KULAKOV, A. Ye.

"Experimental Data on Adaptation and Its Limits in the Action of Poisons
Having a Mutagenic and Embryotrophic Action"

Sb. Farmakol, Khimioterapevt. sredstva. Toksikol. Probl. toksikol.
(Pharmacology of Chemically Therapeutic Substances. Toxicology. Problems
in Toxicology--Collected Works), T. 5 (Itogi nauki i tekhn. VINITI AN
SSSR - Results in Science and Technology of the All-Union Institute of
Scientific and Technical Information, Academy of Sciences, USSR), 1973,
pp 128-145) (from Referativnyy Zhurnal, 30F, Biologicheskaya Khimiya,
No 18, 25 September 1973, abstract No 1754)

Translation: The dependence of the development of a cytogenetic and embryo-
tropic effect on long-term exposure was studied in an example of the action
of different groups of chemicals: chlorine releasing substances, phenoxy-
acetic acid esters, triazines, carbamates, epoxy compounds, imines, and
others. The possibility of adaptation of animals to some substances that
cause pathological changes in offspring was demonstrated.

1/1

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USSR

DDC 621.375.82

KULAKOV, B. P., and NURMUKHAMEDOV, V. K.

"Amplification of Electromagnetic Radiation by Shock Excitation of Transient Phenomena in an Active Resonator"

Tr. Un-ta druzhby narodov im. Patrisa Lumumby (Transactions of the Patrice Lumumba University of Peoples' Friendship), 62, 1972, pp 84-85 (from Fizika, No 7, 1973, Abstract No 7D968)

Translation: A new type of laser amplifier, with shock excitation of the active resonator amplified by radiation, is proposed. The gain is evaluated and the shape of the amplifier output signal is calculated under the condition that at the frequencies of the spectrum of a signal different from the particular resonator frequencies, the amplification in one channel, exceed unity with all losses taken into account. It is shown that through the use of the proposed amplifier there is no need for rigid stabilization of the signal frequency and the resonator length. It is suggested that this amplifier is especially effective for small amplification factors or active medium lengths. V. A. Khodovoy

1/1

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Lasers & Masers

USSR

UDC: 621.375.82

KULAKOV, B. P. and NURMUKHAMEDOV, V. K.

"The Problem of Superregenerative Amplification of Coherent Optical Radiation from Gas Lasers"

Tr. Un-ta druzhby narodov im. Patrisa Lumumby (Transactions of the Patrice Lumumba University of Peoples' Friendship) 62, 1972, pp 93-98 (from RZh--Fizika, No 7, 1973, Abstract No 7D967)

Translation: The kinetic equations describing a gas laser with heterogeneous broadening of the amplification lines in superregenerative strengthening of an external signal are numerically solved. It is shown that the use of modulating the laser Q by pulses with a duration of 3-4 μ s permits attaining a power amplification of the order of 10^9 for a weak signal. Evaluations are made for a He-Ne laser (1.15 microns, a 100-cm resonator, a mirror reflection coefficient of 0.98). The amplifier has a high transit time (of the order of microseconds) determined by the high Q of the resonator. Ye. Aleksandrov

1/1

USSR

1972-07-01-7.001.5

GIBADULLIN, N.S., KULAKOV, B.P., MURIDKHMETOV, A.M.

"Analysis Of The Critical Characteristics Of The Laser Superamplifier Amplification"

Radiotekhnika i elektronika, Vol XVII, No 7, July 1972, pp 1439-1443

Abstract: The paper considers a superregenerative regime of amplification of a coherent optical signal in a gas laser with modulated Q. As a continuation of a previous paper of which B.P. Kulakov is a coauthor, an analysis is made of such basic characteristics as threshold sensitivity, maximum coefficient of amplification and dynamic range of a single-frequency gas laser superamplifier or laser amplifier (LSA). The corresponding parameters are evaluated for a rectangular LSA. At $\lambda = 0.63$ micron these amount to 10^{-8} $L^{-1} \text{ sec}^2$, $10^{10} V^2$ and $10^{12} W^2$, where L and V are the length and volume of the amplifier resonator tube, in cm and cm^3 . Curves are shown of the dependence of the coefficient of amplification of the LSA at $\lambda = 0.63$ micron on the pulse duration of Q -modulation at various levels of the input signal. 1 fig. 12 ref. Received by editor, 30 May 1971.

1/1

USSR

UDC: 621.375:530.1-5.6

KULAKOV, B. P., NURMUKHAMEDOV, V. K.

"Possibilities of Amplifying Optical Emission by Using a Continuous Gas Laser"

V sb. Radiofiz. i rasprostr. elektromagnitn. voln (Radio Physics and Propagation of Electromagnetic Waves--collection of works), Moscow, 1970, pp 152-162 (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11B334)

Translation: The authors discuss an amplification process (superregenerative state) based on the fact that the Doppler effect produces frequency regions within the limits of the amplification curve for the active medium in a laser with corresponding states of the laser beyond the emission threshold; these regions do not coincide with the emission frequency. If the frequency of a monochromatic input signal lies in such a region, then avalanche amplification of the signal takes place, particularly when the signal frequency lies outside the frequency band of the cavity. An equation is derived for the transient amplitude response of the laser. It is shown that the output emission level depends on the input signal level on the rising segment of the amplitude response curve, a fact which may be utilized as the basis for an amplifier, where the rising segment is periodically repeated (pumping by

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KULAKOV, B. P., NURMUKHAMEDOV, V. K., Radiofiz. i rasprostr. elektromagnitnyx voln, Moscow, 1970, pp 152-162

pulses with a duration comparable to the emission recovery time). A circuit is given for an amplifier and a device for observing amplification. The possibility of reducing amplifier noises is discussed. Four illustrations, bibliography of four titles. N. S.

2/2

USSR

UDC: 621.373:530.145.6

DERYUGIN, L. N., KULAKOV, B. P., NURMUKHAMEDOV, V. K.

"Investigation of Transient Processes and Superregenerative Amplification in a Q-Switched Gas Laser"

V sb. Radiofiz. i rasprostr. elektronnymnich. voln (Radio Physics and Propagation of Electromagnetic Waves--collection of works), Moscow, 1970, pp 167, 171, pp 144-151 (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11D336)

Translation: The authors investigate transient phenomena which may be used as the basis for laser operation in the superregenerative mode. It is assumed that Q-switching is done by a step function law; the transient phenomena are determined by the external signal. An amplification formula is derived as well as the amplitude characteristic of the amplifier in the self-excitation mode. The results of experiments with a helium-neon laser are presented. Conditions are discussed for obtaining high amplifications, particularly pumping methods. Bibliography of fifteen titles. N. S.

1/1

Mechanical and Optical

USSR

UDC: 621.60:661.142.35

IGNAT'YEV, M. B., KULAKOV, F. M., and POKROVSKIY, A. M.

"Prospects of Designing and Using Manipulators Controlled from Computers"

Moscow, Nekhanika mashin, No. 27-28, 1971, pp 45-55

Abstract: The manipulators of the title refer particularly to automatic devices, with or without a human operator, for undersea explorations, where the use of a human being is particularly dangerous if not impossible. The design of such manipulators is connected with the realization of unusually complex control algorithms which can be performed only by computers. The basic factors determining the technical-economic efficiency of computer-controlled or man-controlled manipulators are considered, under the assumption that the manipulator operates in a particular medium of specified variability depending on changing conditions. Such psychological factors as exhaustibility, error proneness, and limited working accuracy, are not taken into account. The basic stages in the process of automatic manipulator design are discussed, and the block dia-

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USSR

IGNAT'YEV, M. B., et al., Mekhanika mashin, No 27-28, 1971, pp 45-55

grams of two program- and computer-controlled manipulators shown. Also considered are the linguistic approach to the synthesis of control programs, and the modeling of manipulators with program control. Many of the quoted sources are American.

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USSR

UDC: 621.373:530.145.6

BASOV, N. G., GALOCHKIN, V. T., KULAKOV, L. V., MARKIN, Ye. P., NIKITIN,
A. I., ORAYEVSKIY, A. N.

"A Chemical Laser Based on the Mixture D₂+F₂+CO₂"

Kratk. soobshch. po fiz. (Brief Reports on Physics), 1970, No 8, pp 10-11
(from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12D826)

Translation: To produce emission on the mixture D₂+F₂+CO₂, the authors used the idea of creating a population inversion by transmitting excitation from a "hot" to a "cold" reaction product. With the ratio of D₂ and F₂ pressures equal to 0.9:0.9 mm Hg, the half-width emission pulse duration is ~3 usec. The addition of 0.1 mm Hg of CO₂ to this mixture cuts the pulse duration in half, and when the pressure is increased to 0.3 mm Hg, emission is cut off on a wavelength of 4 μ , but emission appears on a wave of 10.6 μ . As the pressure rises further, the emission intensity of the pulse increases, reaching a maximum in the range of 1-2 mm Hg. The pulse duration of emission on activated CO₂ molecules is 400 usec, i. e. it corresponds to the time of existence of chemiluminescence of excited DF* molecules. The energy in the emission pulse on CO₂ molecules increases in comparison with the emission energy of DF* by a factor of 10, which corresponds to an increase in the quantum yield by a factor of 25. A. K.

U//Z 011

UNCLASSIFIED

PROCESSING DATE--11DEC70

TITLE--DETERMINATION OF THE QUANTIZATION OF ELECTRICAL CONDUCTIVITY CURVES
DURING TRANSESTERIFICATION -U-

AUTHOR--1041-DCNDE, G.D., KULAKOV, M.V., SEMENDUYEV, V.YE., FUZHENTSEVA,
Z.A.

COUNTRY OF INFO--USSR

SOURCE--LAKUKRASNOF. MATER. IKh PRIMEN. 1970, (2), 67-70

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ESTERIFICATION, ALKYD RESIN, ELECTRIC CONDUCTIVITY, CHEMICAL
PRODUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FILE NO----FD707605012/807 STEP NO--UR/0303/707001/C3/700547/0070

CIRC ACCESSION NO--AP0140247

UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--APC140247

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TERMINATION OF THE TRANSESTERIFICATION STEP IN THE MANUF. OF ALKYD RESINS IS INDICATED BY THE APPEARANCE OF A MIN. ON THE PLOTS OF THE REACTION RATE, ELEC. RESISTANCE (R) VS. TIME. R WAS EXPRESSED AS A SERIES AND THE CONDITIONS WERE DEDU. THEORETICALLY, WHICH DET. UNIQUELY AT THE END OF THE TRANSESTERIFICATION WHEN DR OVER DT EQUALS 0.

UNCLASSIFIED

USSR

UDC: 539.3:534.1

SHALASHILIN, V. I., KULAKOV, N. A., KUZNETSOV, Ye. S., YEFANOV, V. V.

"Concerning Some Peculiarities of the Behavior of Elastic Systems With Cracking Under the Effect of Dynamic Loads"

Tr. Mosk. aviat. in-ta (Works of Moscow Aviation Institute), 1971, vyp. 237, pp 3-24 (from FZh-Mekhanika, No 7, Jul 72, Abstract No 7V267)

Translation: Solutions are found for problems on determination of critical loads for a Mises girder and a mildly sloping elastic arch under various types of dynamic loading. In this connection, the Mises girder is treated as a system with one degree of freedom, and the arch is treated as a system with two degrees of freedom. The critical load is taken as that external force which puts the system into motion such that it reaches deflections corresponding to an unstable trajectory on the phase plane at zero velocity. On this basis, the value of the critical load P_{cr} is determined from the condition of equality between the work of external forces and the potential energy of deformation of the system. A graphic method is used to find P_{cr} . Numerical integration of the equation of motion confirmed the admissibility of the proposed approach to solution of problems of this kind. V. B. Silkin.

1/1

USSR

K UDC 681.333

RAPPOPORT, L. I., KHVOSTENKO, A. I., KULAKOV, N. N., SHAPOSHNIK, V. I.,
KIRICHEK, V. A., Donetsk Scientific Research Institute for the Planning
and Design of Mining Machine Automation

"A Device for Simulating Pulsed Interference"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye
Znaki, No 3, 1970, p 130, patent No 260291, filed 4 Nov 68

Abstract: This Author's Certificate introduces a device for simulating pulsed interference. The unit contains the equipment to be studied, a power supply, control pulse generator, and shunting device. As a distinguishing feature of the patent, the device is designed for producing interference with controllable polarity, amplitude, duration, and prf and also for eliminating the mutual effect of the interference simulator and the equipment to be studied. An auxiliary DC power supply with controllable polarity and amplitude of the output voltage is connected in parallel both with the equipment to be studied and with its power supply by means of a commutator. The outputs of the control pulse generator are connected to the commutator and shunting device, which is connected to the commutator and to the auxiliary power supply.

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1/2 020 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--A DEVICE FOR SIMULATING PULSED INTERFERENCE --U--

AUTHOR--(C5)-RAPPOPORT, L.I., KHOVSTENKO, A.I., KULAKOV, N.N., SHAPOSHNIK,
V.I., KIRICHEK, V.A.
COUNTRY OF INFO--USSR

SOURCE--PATENT NO 260291, FILED 4 NOV 68
REFERENCE--MOSCOW, OTKRYTIYA, IZOBREteniya, PRIMYSHLENNyye OBRAZTSY,
DATE PUBLISHED-----70

SUBJECT AREAS--METHODS AND EQUIPMENT, ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--PATENT, PULSE EXCITATION, PULSE GENERATOR, PULSE INTEGRATOR,
PULSE SIGNAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0735

STEP NO--UR/04B2/10/000700/0000/0000

CIRC ACCESSION NUMBER--A00126443

ASSISTANT

2/2 020

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AA0126443

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS AUTHOR'S CERTIFICATE
INTRODUCES A DEVICE FOR SIMULATING PULSED INTERFERENCE. THE UNIT
CONTAINS THE EQUIPMENT TO BE STUDIED, A POWER SUPPLY, CONTROL PULSE
GENERATOR, AND SHUNTING DEVICE. AS A DISTINGUISHING FEATURE OF THE
PATENT, THE DEVICE IS DESIGNED FOR PRODUCING INTERFERENCE WITH
CONTROLLABLE POLARITY, AMPLITUDE, DURATION, AND PRF AND ALSO FOR
ELIMINATING THE MUTUAL EFFECT OF THE INTERFERENCE SIMULATOR AND THE
EQUIPMENT TO BE STUDIED. AN AUXILIARY DC POWER SUPPLY WITH CONTROLLABLE
POLARITY AND AMPLITUDE OF THE OUTPUT VOLTAGE IS CONNECTED IN PARALLEL
BOTH WITH THE EQUIPMENT TO BE STUDIED AND WITH ITS POWER SUPPLY BY MEANS
OF A COMMUTATOR. THE OUTPUTS OF THE CONTROL PULSE GENERATOR ARE
CONNECTED TO THE COMMUTATOR AND SHUNTING DEVICE, WHICH IS CONNECTED TO
THE COMMUTATOR AND TO THE AUXILIARY POWER SUPPLY. FACILITY:
DONETSKIY NAUCHNO-ISSEGOVATEL'SKIY I PROYEKTNO-KONSTRUKTORSKIY INSTITUT
AUTOMATIZATSII GORNYKH MASHIN.

UNCLASSIFIED

USSR

KULAKOV, P. N.

UDC 621.397:621.396.61(088.8)

"Procedure for Increasing the Signal/Noise Ratio of a Television Signal"

USSR Author's Certificate No 248756, Filed 7 Dec 65, Published 7 Jan 70
(from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9G132P)

Translation: The described procedure differs from the known procedures by the fact that in order to improve the signal/noise ratio and the half-tone characteristics the potential relief on the target is recorded and read in one and the same frame with a small time shift equal to 3-4 scanning lines. The movement of the reading beam over the line during the course of scanning compensates for the time of each wobble cycle by additional movement of the beam in the opposite direction. In addition, the stray currents in the video signal which is read are compensated for by the current of the initial signal, and the speed of the reading beam is set 10-12 times faster than the recording beam. This decreases the mutual effect of the recording and reading processes in the same frame. In order to equalize the signal during alternate line scanning the reading beam current is modulated by the voltage received by means of two-halfperiod rectification of the voltage of the vertical beam wobble.

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USSR

UDC: 681.333:621.391

KULAKOV, S. V., RAZZHIVIN, B. P., TIGIN, D. V., SOKOLOV, S. I.

"An Optico-acoustic Device"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 15, Apr 73, Author's Certificate No 374633, Division G, filed 16 Jun 71, published 14 Jul 73, p 112

Translation: This Author's Certificate introduces an optico-acoustic device which contains a delay circuit and electronic amplifiers, and installed on the optical axis: a light source, condenser, collimator, first ultrasonic light modulator, input lens, slit screen, shaping lens, second ultrasonic light modulator, output lens, and photomultiplication module. As a distinguishing feature of the patent, the frequency band of signals which can be handled is extended, and the operating efficiency of the device is improved by adding a dispersion quadripole with linear dispersion characteristic and a pulse generator with linear frequency modulation. The inputs of the quadripole and pulse generator are connected to the input of the device, and the output of the dispersion quadripole is connected through the corresponding amplifier to the input of the second ultrasonic light modulator,

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USSR

KULAKOV, S. V. et al., USSR Author's Certificate No 374633

while the output of the pulse generator is connected through the series connected delay circuit and other amplifier to the input of the first ultra-sonic light modulator.

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USSR

UDC 621.391.677.4

KULAKOV, S. V., LEKS, A. G., SEMENOV, S. P., and UL'YANOV, G. K.

"Ultrasonic Signal Processor"

Moscow, Otkrytiya, izobreteniya, promyshlennye obraztsy, tovarnyye znaki, No. 33, 1971, p 174

Abstract: Used for processing the signals of phased antenna gratings by restoration of the wave front, this device contains a radiating acoustical grating, an ultrasonic polygon, a multichannel amplifier, an indicator, and a system for computing the acoustical field distribution. The computing system takes the form of a receiver acoustical grating whose elements are connected to the television-type indicator, and thus simplifies the construction and reduces its cost. The patent is claimed by the Leningrad Institute of Aviation Instrument Construction.

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USSR

UDC 531.1

KULAKOV, V. F., OSETINSKIY, YU. V., Rostov-na-Donu

"On the Problem of Errors in a Gyroscopic Device Installed on a Moving Platform"

Moscow, Mekhanika tverdogo tela, No 3, May/Jun 71, pp 61-62

Abstract: The effect of asymmetry of the rotor on the operation of a gyroscopic instrument installed on a moving platform is discussed. It is shown that the asymmetry of the rotor may be the cause of an error introduced into measurements of the instrument. Analysis shows that there is a shift in the zero with the motion of the base that is caused by any asymmetry in the rotor of the gyroscope. In the example used of a gyroscope with two degrees of freedom, it is shown that a slight asymmetry in the rotor relative to the axis of rotation can be the reason for errors introduced into measurements of angular velocity and angles of rotation. It is pointed out that if the rotor is made sufficiently accurately that this asymmetry can be neglected and the shift in the zero is absent. It is recommended that in balancing the rotor of a gyroscope one should anticipate operations directed toward eliminating any possible asymmetry of the rotor.

1/1

USSR

UDC: 621.391.883.2

KULAKOV, V. K.

"Line Filters and Systems of Radiators"

Moscow, Radiotekhnika i Elektronika, Vol 17, No 4, Apr 72, pp 721-729

Abstract: Expressions are derived for the signal-to-noise ratio at the output of a narrow-band line filter in terms of the directive gain of a system of orthogonal radiators when the amplitude and phase relations in the corresponding systems deviate from the optimum. An analog of V. A. Kotel'nikov's theorem is proved as applied to the polar diagram of an arbitrary system of radiators. The author examines the analogy between narrow-band line filters and signals, and between discrete systems of radiators and their polar diagrams.

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USCR

UDC 537.1.074

GAL'CHINETS' IY, L.P., KOSTEIN, V.M., LIL'EV, V.I., KUDRIK, V.N., RUDENOK, A.I.,
RYABKA, P.M., UL'YANIS, U...., SHAIKHOVISOV, V.I.

"Study Of The Possibility Of Use Of Type In_2Te_3 Semiconductors As Detectors
Of Reactor Radiation"

V sb. Metrol. neytron. izlucheniya na reaktorakh i ustanovkakh (Metrology Of
Neutron Radiation At Reactors And Accelerators--Collection Of Works), Moscow,
1971, p 56 (from RZh:Elektronika i yeye primeneniye, No 2, Feb 72, Abstract
No 25275)

Translation: During irradiation of III-VI compounds of the In_2Te_3 type by
fast neutrons with fluxes up to $5 \times 10^{16} \text{ cm}^{-2}$, electrons with an energy of
100 Mev with fluxes up to 10^{19} cm^{-2} , and gamma quanta with an energy of 1.2
Mev with fluxes up to 10^{18} cm^{-2} , a marked radiation sensitivity is discovered.
An irreversible change of the electrophysical properties after irradiation is
not established. The possibility is studied of the use of these materials as
the basis for radiation-resistant detectors. A.M.

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USSR

KULAKOV, V. M.

"Has Element 108 Been Discovered?"

MOSCOW, Atomnaya Energiya, Vol 29, No 5, Nov 70, pp 401-402

Abstract: Recently there have been articles on the discovery by Professor V. V. CHERDYNTSEV of a new transuranium element which he says is element 108 and which he has given the name sergenium (Sg). In April 1970 Professor CHERDYNTSEV gave a paper on the discovery of sergenium at a seminar of the Institute of Geochemistry and Analytical Chemistry, Academy of Sciences USSR. One of the seminars at the Institute of Physical Problems, where Academician G. N. FLÈMOV and Doctor of Chemical Sciences I. ZVARA spoke, also devoted its attention to this question. It was noted at both seminars that Professor CHERDYNTSEV had gathered extensive experimental material but that his basic conclusion was untenable from the standpoint of current ideas in nuclear physics. The present article considers the properties attributed to the hypothetical element 108 and the substantiation of these properties given by Professor CHERDYNTSEV. The properties are as follows:

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USSR

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KULAKOV, V. M., Atomnaya Energiya, Vol 29, No 5, Nov 70, pp 401-

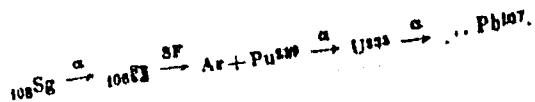
1. Sergenium is genetically related to plutonium-239.
2. Sergenium radiates alpha particles with an energy of ≈ 4.6 Mev.
3. Sergenium has an odd number of neutrons.
4. The half-life of sergenium is $\approx (4 - 5) \cdot 10^8$ years.
5. Sergenium is not fissionable by thermal neutrons and does not undergo spontaneous fission.
6. Sergenium is assigned atomic number 108.
7. The following decay scheme is given for sergenium by CHERDYNTSEV:

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KULAKOV, V. M., Atomnaya Energiya, Vol 29, No 5, Nov '70, pp 401-
402



The conclusion regarding the strongly asymmetric spontaneous fission of element 106 is based on the work of Professor E. K. GERLING, who discovered an excessive amount of argon in uranium minerals.

Only two facts from the above list reflect direct and, therefore, more or less reliable observations:

1. The establishment of an excessive amount of plutonium-239 in some rocks. However, as Professor CHERDYNTSEV himself

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USSR

KULAKOV, V. M., Atomnaya Energiya, Vol 29, No 5, Nov 70, pp 401-402

notes, the possibility that this is plutonium-239 dispersed over the earth's surface as a result of nuclear weapon testing cannot be ruled out of consideration.

2. The discovery of an alpha-radiator with an energy of ≈ 4.6 Mev. The presence of such a radiator in nature seems probable. A more precise determination of the energy is very important, since in the immediate vicinity of the 4.4-4.7-Mev region are the alpha-radiation peaks of uranium-235 ($E_\alpha = 4.35$ Mev) and neptunium-237 ($E_\alpha = 4.76$ Mev). No 4.6-Mev alpha-radiation was found in experiments using the same specimens in Dubna (Joint Institute of Nuclear Research). A negative result was also obtained by the American physicist ALBERT CHIORSO, while the presence of a radiator in fractions isolated from ancient granites was confirmed by ADAMS.

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USSR

KULAKOV, V. M., Atomnaya Energiya, Vol 29, No 5, Nov 70, pp 401-402

Based on a consideration of the most important properties attributed to sergenium from the standpoint of contemporary views on nuclear structure, it may be asserted that there is no reliable proof that the 4.6-Mev alpha-radiatör is element 108. V. V. CHERDYNTSEV's report concerning his discovery is unsubstantiated and premature.

5/5

1/2 011 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--ALPHA DECAY OF CALIFORNIUM 250 AND CALIFORNIUM 252 -U-

AUTHOR--(03)--BARANOV, S.A., SHATINSKIY, V.M., KULAKOV, V.M.

COUNTRY OF INFO--USSR

SOURCE--YAD. FIZ. 1970, 11(3), 701

DATE PUBLISHED-----70

SUBJECT AREAS--NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--ALPHA DECAY, CALIFORNIUM ISOTOPe, ALPHA SPECTROMETER, EVEN EVEN NUCLEUS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1991/1080

STEP NO--UR/0367/70/011/003/0701/0701

CIRC ACCESSION NO--APO110770

UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0110770

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COMPLEX ALPHA EMISSION OF PRIME250 CF AND PRIME 252 CF WAS STUDIED BY USING A DOUBLE FOCUSING MAGNETIC ALPHA SPECTROGRAPH. THE VALUE OF DELTA EALPHA-EALPHA FOR ALPHA BANDS OF CF IS SIMILAR TO 0.03PERCENT, AT A SOLID ANGLE OF OMEGA EQUALS 1 TIMES 10 PRIME NEGATIVE4 TIMES 4 PI AND USEFUL SOURCE SURFACE S EQUALS 1 TIMES 40 MM PRIME2. FOUR AND FIVE ALPHA GROUPS WERE DISCOVERED IN THE SPECTRUM OF THESE EVEN EVEN ISOTOPES, RESP. THE ALPHA PARTICLE ENERGIES, THEIR INTENSITIES, AND THE LEVEL ENERGIES OF THE DAUGHTER NUCLEI, ALONG WITH THE CORRESPONDING VALUES OF I PRIMEPI, ARE PRESENTED. THE VALUE H PRIME2-2J IS SIMILAR TO 7 KEV FOR BOTH LEVELS.

UNCLASSIFIED

USSR

UDC: 632.95

SERGEYEV, L. I., KULAKOV, V. N., BELYSHOV, L. K., KUZNETSOVA,
M. G., SAKHNOV, N. S.

"Experience in the Use of N-1 Fraction as a Herbicide"

Moscow, Khimiya seraorgan. soyedin., soderzhashchikhsya v
neftyakh i nefteproduktakh--sbornik (Chemistry of Organosulfur
Compounds Present in Petroleum and Petroleum Products--collection
of works), T. 9, "Vyssh. shkola", 1972, pp 60-65 (from RZh-Khimiya,
Vol 10, May 73, abstract No 10N594 by T. A. Belyayeva)

Translation: Data are presented on the physiological activity and possibility
for practical utilization of the narrow fraction of high-sulfur aromatic
extract called N-1. The initial raw material was light gas oil of catalytic
cracking. The sulfurous aromatic compounds are extracted with furfural and
"kalosha" gasoline. After the solvents are driven off, a sulfur-aromatic
concentrate is obtained from which a narrow fraction is isolated by rectifi-
cation with the following characteristics: boiling range 250-285°C, density
0.99, molecular weight 152, sulfur content 4.6%, content of aromatic hydro-
carbons 78%, including 56% bicyclic. The hydrocarbons are chiefly dimethyl
1/2

USSR

SERGEYEV, L. I., et al., Chemistry of Organosulfur Compounds Present in Petroleum and Petroleum Products --- collection of works, T. 9, "Vyssh. shkola", 1972, pp 60-65

naphthalines. The organosulfur compounds consist mainly of alkyl derivatives of benzothiophene. For using N-1 fraction as a herbicide or growth stimulator, aqueous emulsions are prepared using OP-7 or OP-10. Laboratory and field experiments are done with concentrations of 0.00001, 0.0001, 0.001, 0.01, 0.1, 1 and 10%. Depending on the concentration, N-1 fraction has herbicidal (0.01-10%) or stimulating (0.001-0.0001%) properties for flowering plants. Even a 1% emulsion of N-1 is heavily damaging to *Stellaria media* (chickweed). In the appropriate quantities N-1 is a contact herbicide and is most effectively used in controlling annual weeds.

2/2

USSR

UDC: 632.95

KULAKOV, V. N., PANKRATOVA, M. F., PINEGINA, Yu. N.

"Synthesis of Benzothiophene From Styrene or Ethylbenzene"

Moscow, Khimiya seraorgan. soyedin., soderzhashchikhysya v neftyakh i nefteproduktakh--sbornik (Chemistry of Organosulfur Compounds Present in Petroleum and Petroleum Products--collection of works), Vol 9, "Vyssh. shkola", 1972, pp 25-31 (from RZh-Khimiya, No 10, May 73, abstract No 10N535 by T. A. Belyayeva)

Translation: Benzothiophene (I), whose derivatives have insecticidal, fungicidal and growth-regulating properties, is synthesized from styrene or ethylbenzene and H₂S on dehydrating catalysts. The authors investigate the influence which a change in the conditions of the experiments have on the results of the process, and make a comparative evaluation of the activity of three dehydrating catalysts: industrial catalyst K-5, an aluminochromium catalyst (78% Al₂O₃, 18% Cr₂O₃, 4% K₂O), and the catalyst FeS/Al₂O₃ prepared by the Mohr-Grinsfelder method. The experiments were done in stainless steel reaction vessels of the flow-through type with 70 and 200 ml capacities; the duration of an experiment was 2-2.5 hours. The catalysts were analyzed by the method of 1/2

USSR

KULAKOV, V. N., et al., Chemistry of Organosulfur Compounds Present in Petroleum and Petroleum Products -- collection of works, Vol 9, "Vyssh. shkola" 1972, pp 25-31

gas-liquid chromatography. A good yield of compound I (27% as calculated from the reacted styrene [33.5% of theoretical]) was attained on the $\text{Cr}_2\text{O}_3/\text{Al}_2\text{O}_3$ catalyst at a volumetric rate of 0.5 hr^{-1} and a hydrogen sulfide to styrene ratio of 11 moles/mole. It is shown that for the given process the most active of the catalysts studied were the aluminochromium and $\text{FeS}/\text{Al}_2\text{O}_3$. With continuous use, the activity of the catalyst falls off fairly rapidly, which means that it must be periodically regenerated. It is shown that under identical conditions the yield of benzothiophene from styrene is practically equal to the yield from ethylbenzene. Benzothiophene of 97-99% purity results after redistillation of the catalyst on a clear rectification column.

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DISCLOSURE BY

USSR

UDC 577.3

FESENKO, Ye. Ye., KULAKOV, V. N., LYUBARSKIY, A. L., and VOL'KENSHTEYN, M. V.

"Three-Phase Kinetics of the Recombination of Myoglobin With Carbon Monoxide at Low Temperature"

Moscow, Doklady Akademii Nauk SSSR, Vol 205, No 2, 1972, pp 485-487

Abstract: A study of the recombination of myoglobin (Mb) with CO after photo-dissociation showed that the reaction proceeded via three pathways. These were designated as very fast, fast, and slow reactions. The energy, the entropy, and the enthalpy of activation were calculated for each reaction in both glycerine and a water-glycerine mixture. The rate constant and relative rates of reaction are given for selected temperatures between -100°C and 0°C . Conformational shifts in $\text{Mb}\cdot\text{CO}$ complexes were described.

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UDC 632.95

USSR

KHANNANOV, T. M., FATKULLINA, N. S., KULAKOV, V. N., LOZSENI, I. F.,
GOLUBEVA, V. A., and TROPIN, I. V.

"Synthesis of α -(Dimethylnaphthyl)-methylcarbamates From Petroleum Raw
Material"

Tr. NII neftekhim. proiz-va (Works of the Scientific Research Institute of
the Petrochemical Industry), 1970, vyp. 2, pp 84-86 (From Kh-Khimiya, No
3, 10 Feb 71, Abstract No 3N533)

Translation: The starting material used for synthesis of alpha-dimethyl-
naphthyl methylcarbamates is 2,6-dimethylnaphthalene and dimethylnaphtha-
lene concentrates prepared from a narrow light gas-oil fraction by catalytic
cracking and sulfonated with H_2SO_4 or chlorosulfonic acid. The resultant
sodium sulfonates are subjected to alkaline fusion with excess KOH at
280-310°C. Dimethyl-alpha-naphthols are converted by a conventional method
to the corresponding methylcarbamates: α -2,6-dimethylnaphthyl methylcarba-
mate, boiling point -- 134-6°C; α -dimethylnaphthyl methylcarbamate, boiling
point -- 158-68°C/5-6. Preliminary tests of both specimens showed that
they are close to Sevin in their biological activity.

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UDC 621.311.442(088.8)

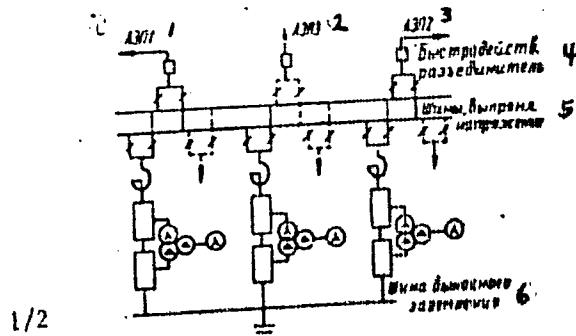
USSR

ARKHANGEL'SKIY, YE. A., KULAKOV, V. P.

"Converting Substation"

USSR Author's Certificate No 267737, filed 28 Aug 63, published 9 Jul 70
(from RZh-Elekrotehnika i Energetika, No 2, Feb 71, Abstract No 2 Ye63 P)

Translation: It is proposed that several single or multiple bridge converters be connected to reactors and disconnects in parallel to one or two unipolar rectified voltage collecting buses (see the figure) at the PPT [semiconducting triode?] substation. Direct current electric power transmission lines are



Key:

- 1. LEP1 [electric power line]
- 2. LEP3
- 3. LEP2
- 4. high-speed disconnect
- 5. rectified voltage buses
- 6. remote ground bus

USSR

ARKHANGEL'SKIY, YE. A., et al., USSR Author's Certificate No. 267737, filed
28 Aug 63, published 9 Jul 70

connected to these buses. In case of an emergency in the converters, the synchro protect blocks the grids of all the rectifiers of the converters; then automatic reclosing of the given converter takes place. In case of a short circuit on the power line, all the converters connected to the given section of collecting buses are blocked, the damaged power line is excluded by high-speed disconnects in the currentless interval, and then automatic reclosing of the converters takes place. If the converters are equipped with uncontrollable rectifiers, lower excitation is used to extinguish and ignite them. The schema insures independent operation of the converters and localization of emergencies without using expensive DC breakers. There is 1 illustration.

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USSR

Nuclear Science and Technology

UDC 620.197.5.539.17

SKAKUN, N. A., KLYUCHAREV, A. P., KHAR'KOV, O. N., ZELENSKIY, V. F., and
KULAKOV, V. S.

"Using the Nuclear Reaction $O^{18}(p, \alpha)N^{15}$ to Study Oxidation of Metals"
Moscow, Atomnaya Energiya, Vol 30, No 5, May 71, pp 456-458

Abstract: In recent times data on nuclear reactions have been employed to study the processes taking place in the surface layers during oxidation of metals and alloys. Registering the reaction products of the material irradiated by charged particles makes it possible to determine the amount of test element without ruining the sample and at the same time localizing it by depth. One of the methods suggested in this article involves registering it by analyzing the energy spectrum of alpha-particles from the reaction $O^{18}(p, \alpha)N^{15}$ by bombarding a sample containing the isotope O^{18} with a beam of monoenergetic protons.

The excitation function of the reaction $O^{18}(p, \alpha)N^{15}$ was measured experimentally in the range of proton energies of 500-730 keV. Using the procedures discussed in the article, the authors find the distribution profile of oxygen in oxidized samples of zirconium. They also examine the possibility of making similar investigations using the narrow resonance of the reaction

USSR

SKAKUN, N. A., et al., Atomnaya Energiya, Vol 30, No 5, May 71, pp 456-458

$^{18}_0(p, \alpha)^{15}_N$ when $E_p = 629$ keV. They also mention the possibility of using this resonance to study the thick surface layers of metals. All the investigations are supported by illustrations in the form of graphs.

The methods employed made it possible to investigate the interaction of oxygen with various solids, especially with the majority of metals and alloys used in the design of reactors.

This article contains 4 figures, 2 equations, and a bibliography of 5 titles.

USSR

UDC 621.357.8:669.794(088.8)

TEREKHOVA, V. F., KULAKOV, Yu. A., SAVITSKIY, Ye. M., SHELKOVAYA, I. G.

"Method of Electrolytic Polishing of Rare Earth Metals and Their Alloys"

USSR Author's Certificate No 305203, Filed 27/01/70, Published 13/07/71,
(Translated from Referativnyy Zhurnal, Khimiya, No 2, 1972, Abstract No
2 L248 P from the ResUME).

Translation: A method of electrolytic polishing of rare earth metals and their alloys in an electrolyte containing HNO_3 and glycerin, differing in that in order to improve the quality of polishing of yttrium and its alloys, oxalic acid is introduced to the electrolyte in the following ratio of components, wt. %: HNO_3 -- 40-50, oxalic acid 20-40, glycerin -- remainder, and the process is conducted at 20°C and $D = 1.5-3 \text{ a/cm}^2$.

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1/2 021
TITLE--GLUCOCORTICOID FUNCTION OF THE ADRENALS IN PATIENTS WITH
OBSTRUCTIVE PULMONARY EMPHYSEMA -U-
AUTHOR--KULAKOV, YU.A.

UNCLASSIFIED

PROCESSING DATE--16 OCT 70

COUNTRY OF INFO--USSR

SOURCE--TERAPEVTICHESKIY ARKHIV, 1970, VOL 42, NR 5, PP 66-69
DATE PUBLISHED-----70

K

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PULMONARY EMPHYSEMA, ADRENAL GLAND, CORTICOSTEROID, HYPOXEMIA

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0012

STEP NO--UR/0504/70/042/005/0066/0069

CIRC ACCESSION NO--AP0120712

UNCLASSIFIED

2/2 021

CIRC ACCESSION NO--4P0120712

UNCLASSIFIED

PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. THE AUTHOR INVESTIGATED THE GLUCOCORTICOID FUNCTION OF THE ADRENALS IN 45 PATIENTS WITH OBSTRUCTIVE PULMONARY EMPHYSEMA. THE AUTHOR DETERMINED 17-OXICORTICOSTEROIDS AND 11-OXICORTICOSTEROIDS IN THE BLOOD, URINE EXCRETION OF FREE AND SUMTOTAL 17-OXICORTICOSTEROIDS AND SUMTOTAL 17 KETASTEROIDS (PRIOR TO AND AFTER AN ADEQUATE LOAD OF ACTH). TO EVALUATE THE PRESENCE AND THE DEGREE OF DISORDERS OF THE GLUCOCORTICOID FUNCTION IN PATIENTS WITH OBSTRUCTIVE PULMONARY EMPHYSEMA 18 PRACTICALLY HEALTHY MEN OF THE SAME AGE AS THE PATIENTS WERE EXAMINED. THE DATA OBTAINED SHOW THAT THE GLUCOCORTICOID FUNCTION OF THE ADRENALS IN PATIENTS WITH OBSTRUCTIVE PULMONARY EMPHYSEMA WITHOUT CIRCULATORY INSUFFICIENCY WAS CHANGED; THE DEGREE AND NATURE OF ITS CHANGE IS DEPENDABLE UPON THE MARKEDNESS OF ARTERIAL HYPOHEMIA. SIGNIFICANT ARTERIAL HYPOXEMIA PRODUCES A STIMULATING EFFECT ON THE GLUCOCORTICOID FUNCTION OF THE ADRENALS. FACILITY: KAFEDRA PROPEDEVTIKI VNUTRENNIKH BOLEZNEY TOMSKOGO MEDITSINSKOGO INSTITUTA.

UNCLASSIFIED

1/3. 014

UNCLASSIFIED

PROCESSING DATE--09OCT70
-U-

TITLE--THE VIBROCHEMICAL CLEANING AND POLISHING OF PARTS

AUTHOR--KULAKOV YU. M.

K

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, STANKI I INSTRUMENT, NO 2, 1970, PP 28-30

DATE PUBLISHED-----70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--METAL CLEANING, VIBRATION EFFECT, METAL POLISHING, CLEANING
TECHNIQUE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1993/0885

STEP NO--0121/70/000700270028/0030

CIRC ACCESSION NO--AP0113730

UNCLASSIFIED

2/3 014

CIRC ACCESSION NO--AP0113730

UNCLASSIFIED

PROCESSING DATE--09OCT70

METHOD CONSTITUTES A COMPLEX AND MECHANICAL ACTION UPON THE PROCESSED PARTS OF THE CHEMICALLY ACTIVE MEDIUM, THE CONTAINER WALLS, AND THE PARTS THEMSELVES DURING THEIR MOVEMENTS IN THE CONTAINER OF THE VIBRATORY INSTALLATION. THE PROCESS OF VIBROCHEMICAL CLEANING AND POLISHING OF PARTS CONSISTS OF THE FOLLOWING OPERATIONS: DEGREASING IN GASOLINE, DRYING, CHEMICAL DEGREASING, WASHING IN HOT AND COLD WATER, VIBROCHEMICAL PROCESSING, BRIGHTENING, AND PASSIVATION, WITH WASHING IN COLD WATER IN THE INTERVALS BETWEEN THESE OPERATIONS, AND SUBSEQUENT DRYING AND CHECKING. VIBROCHEMICAL PROCESSING IS CARRIED OUT IN THE PR-376A INSTALLATION WITH A FREQUENCY OF 1500 VIBRATIONS PER MINUTE AND AN AMPLITUDE UP TO 5MM IN A CONTAINER WITH A CAPACITY OF UP TO 10 LITERS, PRODUCED IN SERIES BY THE KIROVAKANSKIY PRECISION MACHINE TOOL PLANT. A DESCRIPTION OF THIS INSTALLATION IS GIVEN; ITS OPERATION IS DESCRIBED; INFORMATION CONCERNING THE MATERIALS PROCESSED AND THE PROCESSING MATERIALS IS GIVEN. THE VIBROCHEMICAL METHOD OF CLEANING AND POLISHING PARTS POSSESSES THE FOLLOWING QUALITIES: 1) HIGH PRODUCTIVITY (1.5 TIMES HIGHER THAN THE VIBROABRASIVE METHOD); 2) THE ABSENCE OF CONSIDERABLE FORCE ACTIONS AND CHARGING OF THE SURFACE OF THE PARTS IN PROCESSING; 3) EASY SEPARATION OF THE PARTS FROM THE PROCESSING MEDIUM; 4) THE ABSENCE OF SUPPLEMENTARY EQUIPMENT (CRUSHERS, SIEVES), AND OF ABRASIVE OR METAL FILLERS. THE EXPECTED AREA OF APPLICATION OF THIS METHOD IS THE CLEANING AND POLISHING OF STAMPED PARTS (OR AFTER MACHINING) WITH DIMENSIONS OF UP TO 100 MM, OF ALL MATERIALS AND ALLOYS.

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PROCESSING DATE--09OCT70

CIRC ACCESSION NU--AP0113730

ABSTRACT/EXTRACT--THE PRECISION OF THE PARTS IS NOT HIGHER THAN CLASS 2,
THE ROUGHNESS IS NOT HIGHER THAN CLASS B, THE PROJECTING EDGES ARE NOT
OVER 0.3 MM IN THICKNESS.

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APPROVED FOR RELEASE: 09/17/2001

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Marine and Shipbuilding

USSR

UDC 629.12:532

GALAKHOV, I. N., KULAKOV, V. P.

"Wave Bending Moment and Roll of a Catamaran From the Results of Model Tests on Regular Waves"

V sb. Materialy 25 Nauch.-tekhn. konferentsii. Leningr. inst. vodn. transp. 1971. T. 2 (Materials of the 25th Scientific and Technical Conference. Leningrad Institute of Water Transportation, 1971. Vol. 2), Leningrad, 1971, pp 61-65 (from RZh-Mekhanika, No 10, Oct 71, Abstract No 1QB409)

Translation: The paper presents the results of tests of a catamaran model in an experimental tank with variation of the horizontal and vertical clearance, as well as the length, height and course angle of regular waves. The longitudinal bending moment in both hulls was measured as well as the pitching, heaving and rolling.

It is noted that a wide variation in vertical clearance has practically no effect on the relative amplitudes of the investigated processes. Horizontal clearance has a more noticeable effect: rolling (and heaving as well, in the case of a broadside attitude to the waves) decreases, and the bending moment increases. On an oblique course, the bending moments

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GALAKHOV, I. N., KULAKOV, Yu. P., Materialy 25 Nauch.-tekhn. konferentsii,
Leningr. in-t vodn. transp. 1971. T. 2, Leningrad, 1971, pp 61-65

in the catamaran hull facing the oncoming waves may be 45 percent higher than the corresponding moments in the other hull.

The authors give comparative results of tests of an isolated hull or a catamaran model, and point out the advantages of a double-hull model with regard to pitching and rolling. G. A. Alchudzham.

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USSR

UDC 621.382.5

VIKTOROV, D.V., KULAKOVA, A.F., ROZMAN, I.M.

"Effect Of Irradiation By 14 Mev Neutrons On Some Parameters Of P217V and IT906A Transistors"

V sb. Radiats. fiz. nemet kristallov. T.3 Ch.2 (Radiation Physics Of Nonmetallic Crystals. Vol 3, Part 2--Collection Of Works), Kiev, "Nauk.dumka," 1971, pp 214-219 (from RZh--Elektronika i yeye primeneniye, No 12, Dec 71, Abstract No 12B532)

Translation: The paper investigates the dependences of the static transmission coefficient of the current V_{st} at the boundary of the saturation region and of the reverse current of the collector I_{co} with a disconnected output of the emitter, on the integrated neutron flux β . It is found that with respect to V_{st} , a type IT906A transistor is approximately eight times more resistant to irradiation than a type P217V transistor. The reverse current is comprised of the bulk current I_b and of the surface leakage current I_l : $I_{co} = I_b + U/A_1$. With an increase of the flux β , I_b increases and R_l (resistance for surface leakages) is decreased. After attainment of the flux $\beta = 4 \cdot 10^{12} \text{ cm}^{-2}$, R_l almost does not change from one transistor to another, even if the initial values of their R_l differ strongly. 6 ill. 3 ref. I.M.